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| logo  **HCC 11 Physics**  **Determining ‘g’**  Investigation 1 2014/15 |  |

TIME ALLOWED FOR THIS TEST

Preparation: One class period

Working time: Double period

Write up time: One week after conducting

MATERIAL REQUIRED OR RECOMMENDED FOR THIS TEST

Year 11 ATAR Physics Formula & Constants Sheet

Pens, pencils, eraser, rule, Mathaid or Math-o-Mat

Scientific calculator

INSTRUCTIONS

Numerical answers should be evaluated to the appropriate number of significant figures unless otherwise stated and given in scientific notation.

All recorded measurements should be shown in both graphs and tables with the associated error.

For a falling object not affected significantly by air resistance, the value of the gravitational acceleration, g, can be found by collecting first-hand information.

Aim: To find the value of the gravitational acceleration, g.

First you must write what you know of the topic of acceleration and acceleration due to gravity, with appropriate referencing (in-text and end-text) and use this information to develop a hypothesis of what you will find.

Define your variables for this investigation from your knowledge of how to calculate acceleration: dependent (what variable you will be measuring), independent (what variable you will be changing to see the relationship between it and the dependent variable) and state several variables you are controlling to ensure a fair test and how and why you are controlling them.

Materials provided:

* Vernier Data Logging system
* 2 x photogates
* Matchbox
* Ping pong ball
* Retort stand
* Measuring cylinder

You will need to construct a method for determining 'g' using these materials. When you write out your procedure and apparatus list, make sure you only mention the materials you have chosen to utilise, and have written out the steps in full detail, so that if someone were to follow your method, they would achieve the exact same results.

At this stage, check in with your teacher and ask if you can begin conducting your experiment.

You will need to produce data tables and graphs to help draw your conclusions. Data tables should indicate the uncertainty of the data.

When you discuss your findings, you must explain trends in the data and any calculations you have made from your data and what they mean. You should identify any sources of error and discuss how you reduced error, or how you recognise you could have performed the experiment better to reduce error next time. Identify any outliers that do not fit with the trend.

Finally, state your conclusion. This should be a direct, brief response to the aim and should refer to your hypothesis - whether it was disproved or supported.